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SEMINAR

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Refreshments: 3:30 p.m.
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IMAGE RETRIEVAL FROM A MENTAL PICTURE

ABSTRACT

In one challenging scenario for “image retrieval,” a person has a picture “in mind” (i.e., a mental picture, say of a face or house) and some variant of this picture is assumed to belong to a large database of images. The person responds to a sequence of machine-generated queries designed to eventually display this “target” image on a computer screen. For example, at each step, the person declares which of eight displayed images is “closest” to his target. These similarity decisions are entirely subjective and user-dependent, and the typical user has no knowledge about how the images in the database are indexed. Moreover, in general, there is no semantic annotation.

I will discuss a search engine under development at INRIA in France. The algorithm for choosing the displayed images at each iteration involves a Bayesian (relevance feedback) model and an optimality criterion based on conditional entropy. Performance is measured by the expected number of iterations necessary to locate the target image. What renders this problem so difficult is the design of probability distributions for the response of the user which are consistent with human behavior. Such consistency is essential for achieving practical results (say fewer than 30 iterations) with large databases (say of order ten thousand).